

**FRACTAL ANALYSIS OF THE DISTRIBUTION AND MORPHOLOGY OF  
PORES IN DINOSAUR EGGSHELLS COLLECTED IN MEXICO.  
IMPLICATIONS TO UNDERSTAND THE BIOMINERALIZATION OF  
CALCIUM CARBONATE**

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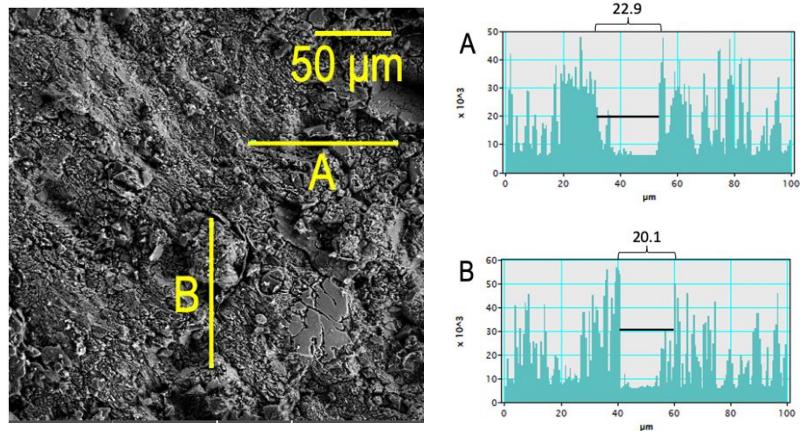
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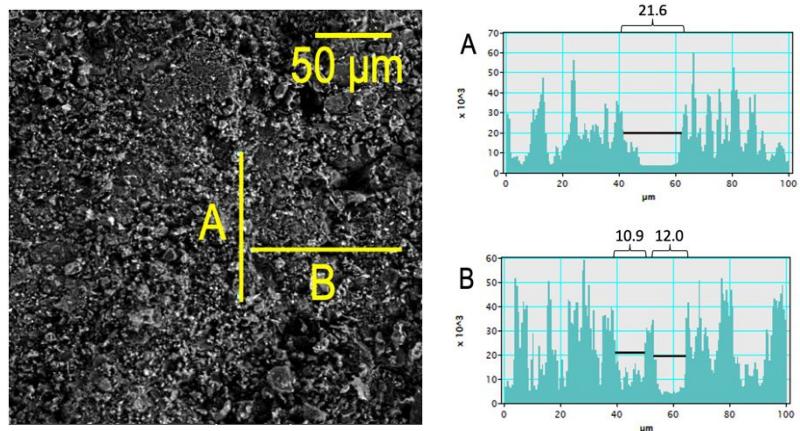
**S.1. Determination of porosity and pore size by Scanning Electron Microscopy (SEM) and Atomic Force Microscope (AFM).** The surface area and roughness were determined by fractal dimension on both surfaces of the eggshells using SEM and AFM images, respectively. In addition, the pore size was determined with SEM images using ImageJ and Digital Micrograph software.

**Table S1.** Fractal dimension of both surfaces of the eggshells of dinosaur using SEM binary images and AFM images.

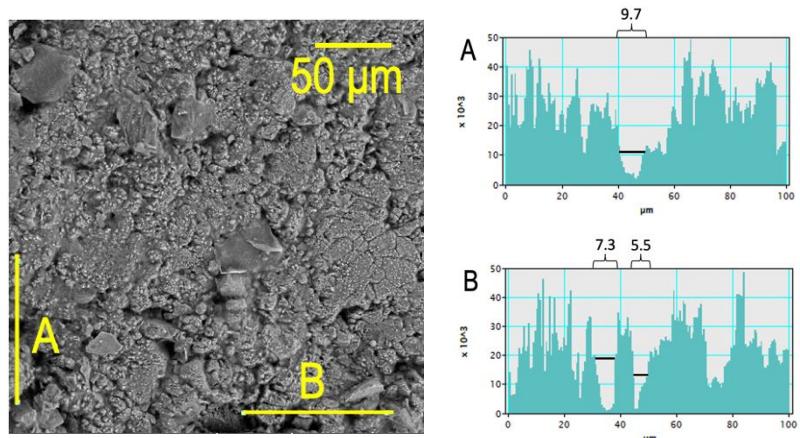
Dinosaur Eggshell	SEM Images		AFM Images	
	External Surface	Inner Surface	External Surface	Inner Surface
<i>Spherooolithus S1 (I)</i>	1.8136	1.8452	2.273	2.479
<i>Lambeosaurinae (II)</i>	1.6947	1.7827	2.251	2.398
<i>Spherooolithus S2 (III)</i>	1.8009	1.8052	2.366	2.477
<i>Prismatoolithus (IV)</i>	1.8622	1.8674	2.260	2.448
<b>Non-identified (V)</b>	1.8391	1.8521	2.310	2.381



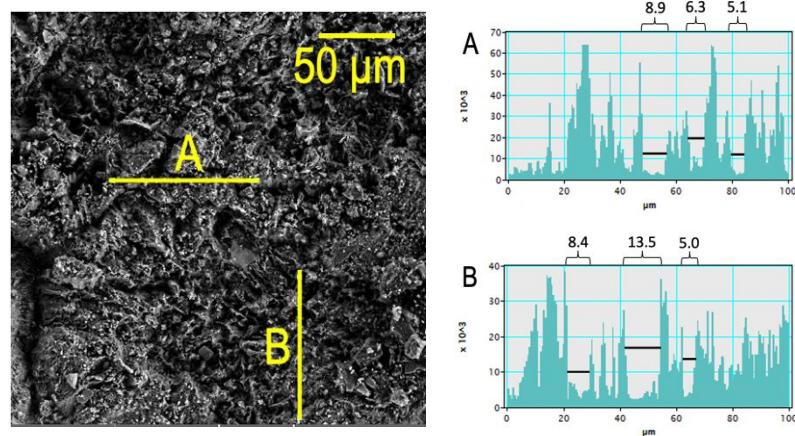
**Figure S1.** SEM images and roughness profile indicating the possible pores of the external surface of the Lambeosaurinae eggshell. **A.** Vertical profile; **B.** Horizontal profile.



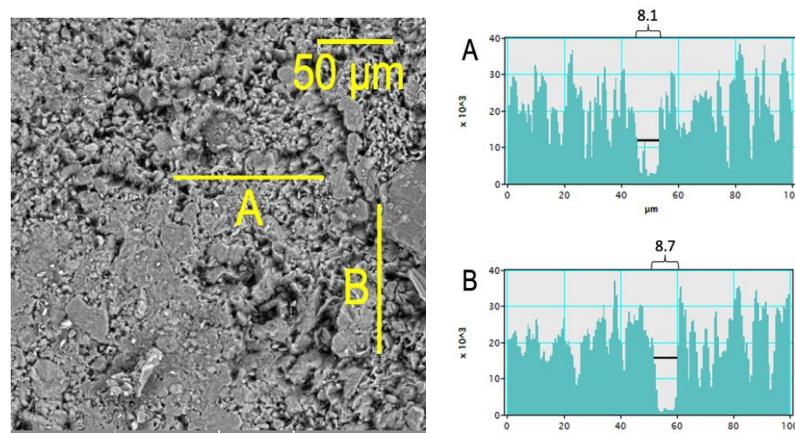
**Figure S2.** SEM images and roughness profile indicating the possible pores of the inner surface of the Lambeosaurinae eggshell. **A.** Vertical profile; **B.** Horizontal profile.



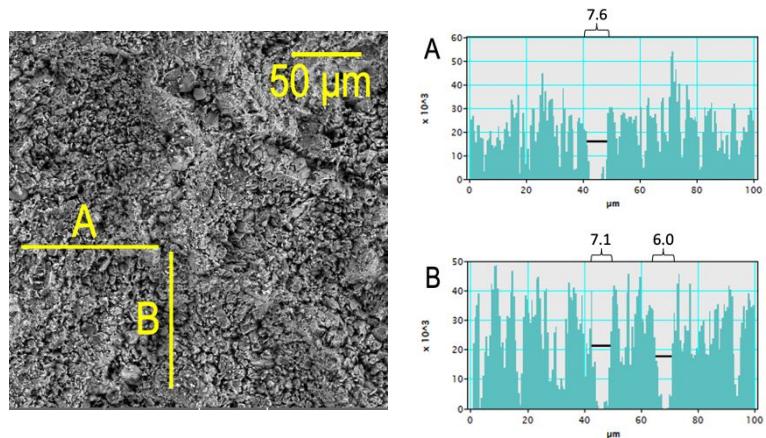
**Figure S3.** SEM images and roughness profile indicating the possible pores of the external surface of the eggshell of the *Spheroolithus* sample 2. **A.** Vertical profile; **B.** Horizontal profile.



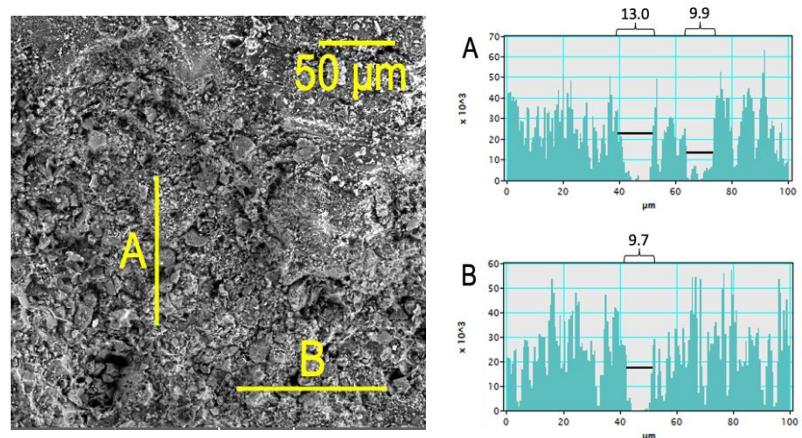
**Figure S4.** SEM images and roughness profile indicating the possible pores of the inner surface of the eggshell of the *Spheroolithus* sample 2. **A.** Vertical profile; **B.** Horizontal profile.



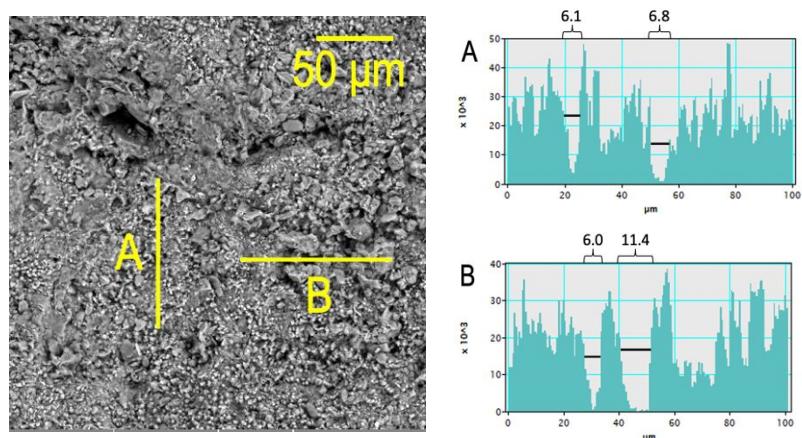
**Figure S5.** SEM images and roughness profile indicating the possible pores of the external surface of the *Prismatoolithus* eggshell. **A.** Vertical profile; **B.** Horizontal profile.



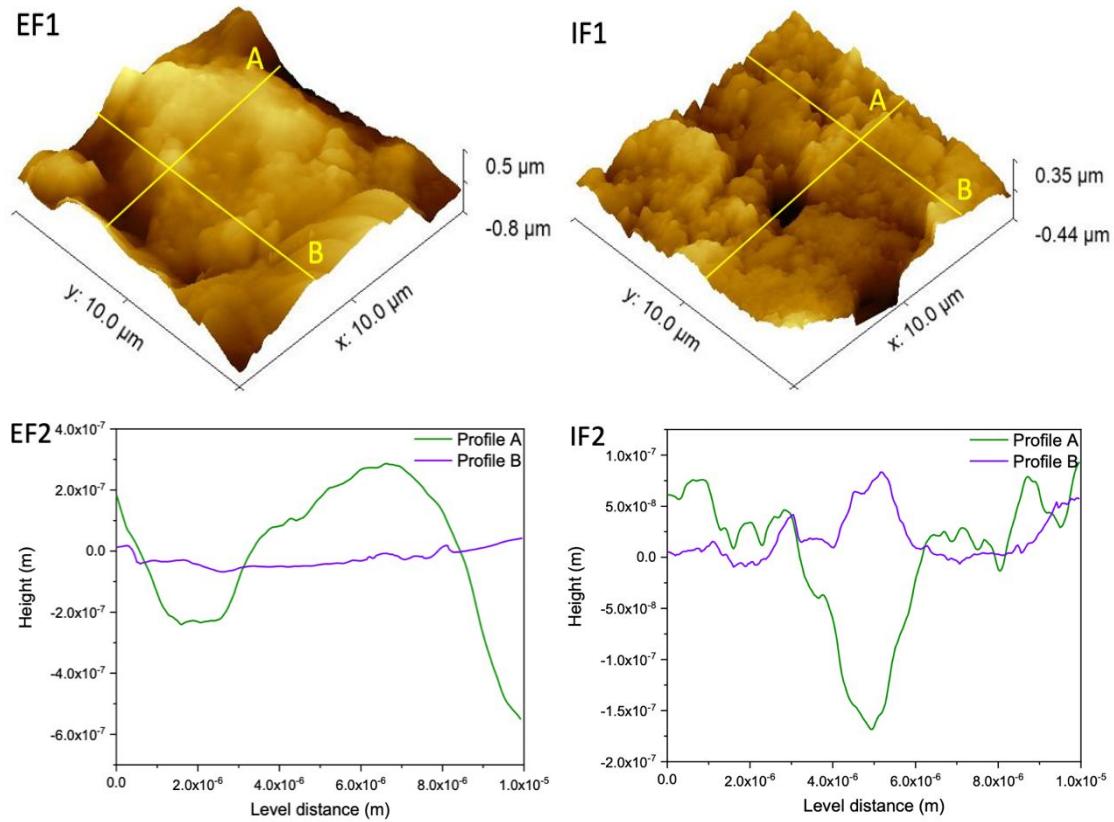
**Figure S6.** SEM images and roughness profile indicating the possible pores of the inner surface of the *Prismatoolithus* eggshell. **A.** Vertical profile; **B.** Horizontal profile.



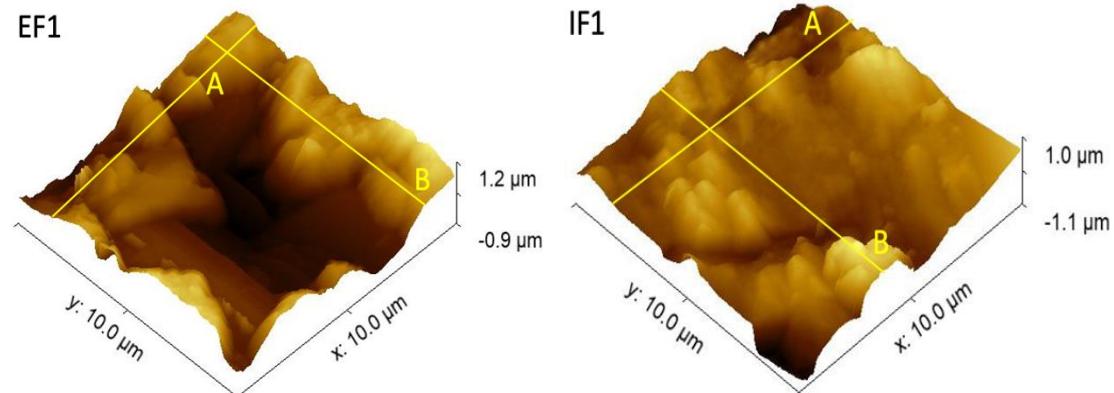
**Figure S7.** SEM images and roughness profile indicating the possible pores of the external surface of the eggshell of the non-identified ootaxon. **A.** Vertical profile; **B.** Horizontal profile.

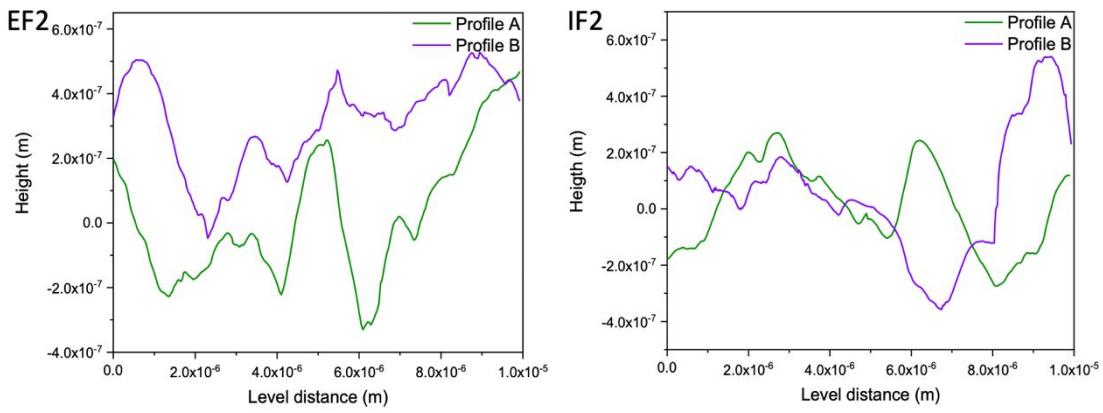


**Figure S8.** SEM images and roughness profile indicating the possible pores of the inner surface of the eggshell of the non-identified ootaxon. **A.** Vertical profile; **B.** Horizontal profile.

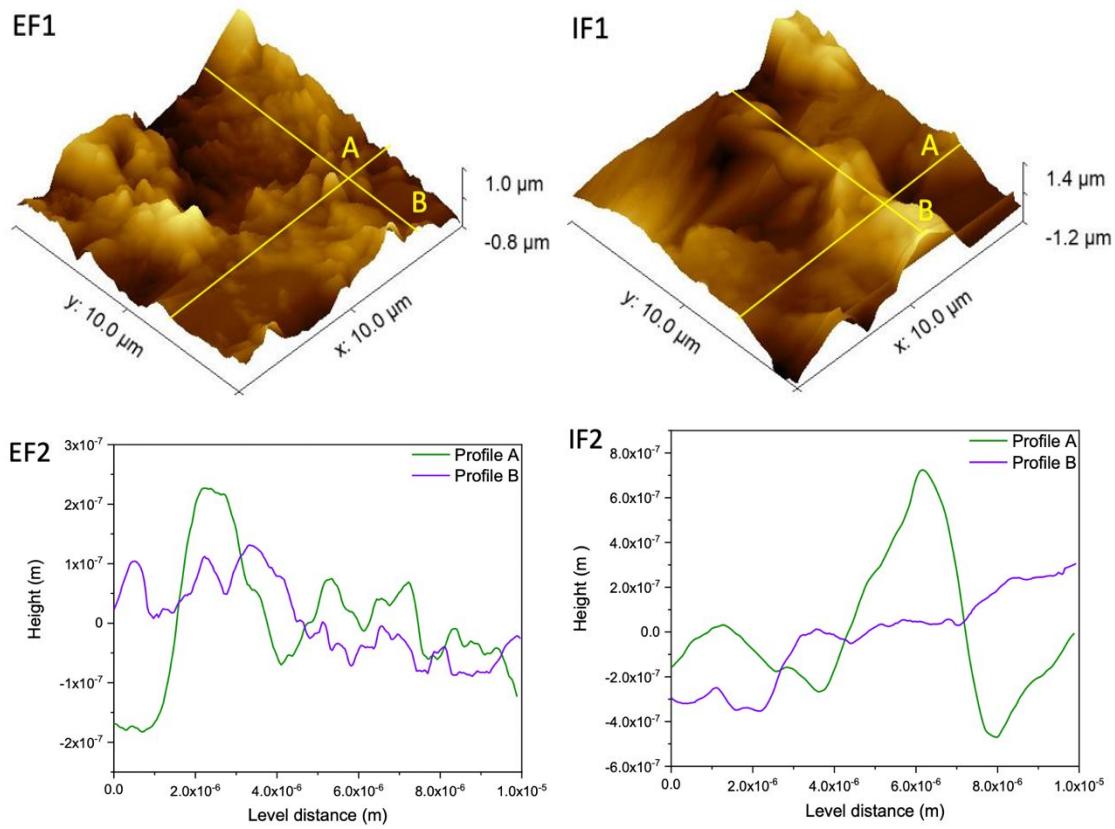


**Figure S9.** Topographies and profiles of the pore size of the surface of the Lambeosaurinae eggshell. **EF.** External surface; **IF.** Inner surface; **1.** AFM image; **2.** Profiles of the superficial structure. **A.** Profile corresponding to X axis; **B.** Profile corresponding to Y axis.





**Figure S10.** Topographies and profiles of the pore size of the surface of eggshell of the *Spheroolithus* sample 2. **EF.** External surface; **IF.** Inner surface; **1.** AFM image; **2.** Profiles of the superficial structure. **A.** Profile corresponding to X axis; **B.** Profile corresponding to Y axis.



**Figure S11.** Topographies and profiles of the pore size of the surface of eggshell of the non-identified ootaxon. **EF.** External surface; **IF.** Inner surface; **1.** AFM image; **2.** Profiles of the superficial structure. **A.** Profile corresponding to X axis; **B.** Profile corresponding to Y axis.

**Table S2.** Superficial area and mean roughness of dinosaur eggshell based on AFM images.

Dinosaur Eggshell	External Roughness - $\mu\text{m}^2$ (Mean Roughness (Sa) - nm)	Inner Roughness - $\mu\text{m}^2$ (Mean Roughness (Sa) – nm)
<i>Spherooolithus S1 (I)</i>	143.4 (386.7)	152.2 (204.5)
<i>Lambeosaurinae (II)</i>	109.7 (79)	112.0 (178.0)
<i>Spherooolithus S2 (III)</i>	133.6 (357.7)	145.4 (230.4)
<i>Prismatoolithus (IV)</i>	135.8 (386.9)	137.3 (278.3)
<b>Non-identified (V)</b>	130.2 (203.8)	139.4 (319.2)